WHAT IS CLAIMED IS:

1. A system for computing optical flow between images within an image sequence comprising:

an image processor processing the image sequence, wherein the image processor:

derives epipolar geometry for the images from point matches between the images; and

computes optical flow for each pixel within at least one of the images under a constraint derived from the epipolar geometry.

2. The system according to claim 1, wherein the image processor, in deriving the epipolar geometry for the images, computes sparse optical flow between the images.

3. The system according to claim 1, wherein the image processor, in computing optical flow for each pixel within at least one of the images, employs a constraint derived from a fundamental matrix between the images.

4. The system according to claim 1, wherein the image processor utilizes the constraint derived from the epipolar geometry in combination with least squares minimization to compute optical flow for each pixel within at least one of the images.

5. The system according to claim 1, wherein the image processor utilizes the constraint derived from the epipolar geometry in combination with robust statistical methods to compute optical flow for each pixel within at least one of the images.

6. The system according to claim 1, wherein the image processor computes optical flow u,v for each pixel within at least one of the images from $I_x u + I_y v + I_t = 0$, where I_x, I_y, and I_t are known spatio-temporal derivatives of image intensity at each pixel within the at least one image, and $a_{x,y} u + b_{x,y} v + c_{x,y} = 0$, where $a_{x,y}$, $b_{x,y}$ and $c_{x,y}$ are derived from a fundamental matrix F between the images.

7. The system according to claim 1, wherein the image processor computes dense optical flow between the images.

8. A system for computing optical flow between images within an image sequence comprising:

a video receiver including an input for receiving the image sequence;

an image processor within the video system processing the image sequence, wherein the image processor:

derives epipolar geometry for the images from point matches between the images; and

computes optical flow for each pixel within at least one of the images under a constraint derived from the epipolar geometry.

9. The system according to claim 8, wherein the image processor, in deriving the epipolar geometry for the images, computes sparse optical flow between the images.

10. The system according to claim 8, wherein the image processor, in computing optical flow for each pixel within at least one of the images, employs a constraint derived from a fundamental matrix between the images.

11. The system according to claim 8, wherein the image processor utilizes the constraint derived from the epipolar geometry in combination with least squares minimization to compute optical flow for each pixel within at least one of the images.

12. The system according to claim 8, wherein the image processor utilizes the constraint derived from the epipolar geometry in combination with robust statistical methods to compute optical flow for each pixel within at least one of the images.

13. The system according to claim 8, wherein the image processor computes optical flow u,v for each pixel within at least one of the images from $I_x u + I_y v + I_t = 0$, where I_x, I_y, and I_t are known spatio-temporal derivatives of image intensity at each pixel within the at least one image, and $a_{x,y}u + b_{x,y}v + c_{x,y} = 0$, where $a_{x,y}$, $b_{x,y}$ and $c_{x,y}$ are derived from a fundamental matrix F between the images.

14. The system according to claim 8, wherein the image processor computes dense optical flow between the images.

15. A method for computing optical flow between images within an image sequence comprising:

deriving epipolar geometry for the images from point matches between the images; and

computing optical flow for each pixel within at least one of the images under a constraint derived from the epipolar geometry.

16. The method according to claim 15, wherein the step of deriving the epipolar geometry for the images from point matches between the images further comprises:

computing sparse optical flow between the images.

17. The method according to claim 15, wherein the step of computing optical flow for each pixel within at least one of the images under a constraint derived from the epipolar geometry further comprises:

computing optical flow employing a constraint derived from a fundamental matrix between the images.

18. The method according to claim 15, wherein the step of computing optical flow for each pixel within at least one of the images under a constraint derived from the epipolar geometry further comprises:

utilizing the constraint derived from the epipolar geometry in combination with least squares minimization to compute optical flow for each pixel within at least one of the images.

19. The method according to claim 15, wherein the step of computing optical flow for each pixel within at least one of the images under a constraint derived from the epipolar geometry further comprises:

utilizing the constraint derived from the epipolar geometry in combination with robust statistical methods to compute optical flow for each pixel within at least one of the images.

20. The method according to claim 1, wherein the step of computing optical flow for each pixel within at least one of the images under a constraint derived from the epipolar geometry further comprises:

computing optical flow u,v for each pixel within at least one of the images from $I_x u + I_y v + I_t = 0$, where I_x, I_y, and I_t are known spatio-temporal derivatives of image intensity at each pixel within the at least one image, and $a_{x,y} u + b_{x,y} v + c_{x,y} = 0$, where $a_{x,y}$, $b_{x,y}$ and $c_{x,y}$ are derived from a fundamental matrix F between the images.